

Resistor Kit

CFR 1/4 W 5% (2.5 x 6.8)



RoHS
Compliant



Specifications:

Kit No : 1171087 E12 Series = 85 values
Quantity : 100 pieces per value
Total Quantity : 8,500 pieces

Ratings:

Ratings shall be shown in the table 1.

Type	CR
Rated Power	0.25W at 70°C
Max. Working Voltage	250V
Max. Overload Voltage	500V
Dielectric Withstanding Voltage	500V
Rated Ambient Temp.	70°C
Operating Temp.Range.	-55°C to +155°C
Resistance Tolerance	± 5%
Resistance Range	1Ω to 10MΩ

Table 1

Power Rating:

Resistors shall have a power rating based on continuous full load operation at an ambient temperature of 70°C. For temperature in excess of 70°C , the load shall be derated as shown in the figure 1.

Voltage Rating:

Resistors shall have a rated direct-current (DC) continuous working voltage or an approximate sine-wave root-mean-square (RMS) alternating-current (AC) continuous working voltage at commercial- line frequency and waveform corresponding to the power rating , as determined from the following formula :

$$RCWV = \sqrt{P \times R}$$

Were : RCWV = Rated DC or RMS AC continuous working voltage at commercial-line frequency and waveform (volt)

P=Power Rating (watt)

R=Nominal Resistance (ohm)

Resistor Kit

CFR 1/4 W 5% (2.5 x 6.8)



In no case shall the rated DC or RMS AC continuous working voltage be greater than the applicable maximum value.

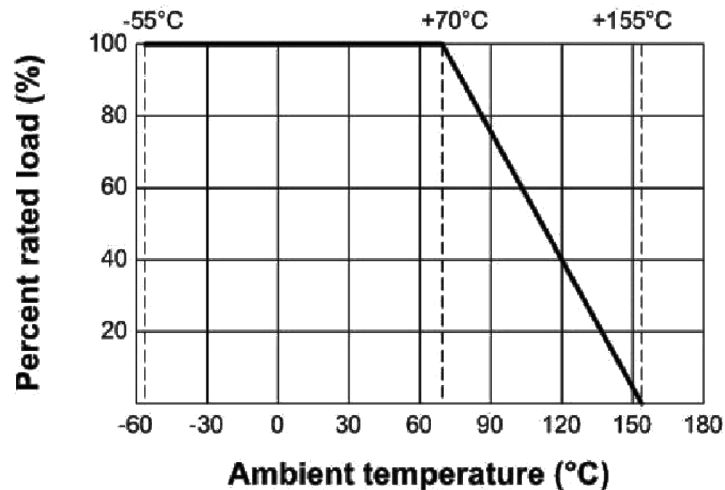
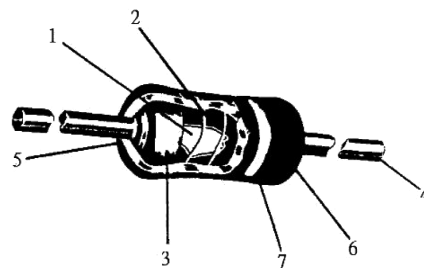


Figure 1

Nominal Resistance :

Effective figures of nominal resistance shall be in accordance with E-12 series, and resistance tolerance shall be shown by table 1.

Construction:



No.	Name	Material
1	Basic Body	Rod Type Ceramics
2	Resistance Film	Carbon Film
3	End Cap	Steel (Tin plated iron surface)
4	Lead Wire	Annealed copper wire coated with tin
5	Joint	By welding
6	Coating	Insulated epoxy resin (Colour: Beige)
7	Color Code	Epoxy Resin

Resistor Kit

CFR 1/4 W 5% (2.5 x 6.8)



Coated Type Kit Resistors (CFR)

Characteristics:

Characteristics	Limits		Test Methods (JIS C 5201-1)
DC. resistance	Must be within the specified tolerance.		The limit of error of measuring apparatus shall not exceed allowable range or 5% of resistance tolerance (Sub-clause 4.5)
Insulation resistance	Insulation resistance is 10,000MΩ Min		Resistors shall be clamped in the trough of a 90° metallic V-block or foil method use a metal foil shall be wrapped closely around the body of the resistor. After that shall be tested at DC potential respectively specified in the above list for 60 +10/-0 secs. (Sub-clause 4.6)
Dielectric withstanding voltage	No evidence of flashover mechanical damage, arcing or insulation break down		Resistors shall be clamped in the trough of a 90° metallic V-block or foil method use a metal foil shall be wrapped closely around the body of the resistor. After that shall be tested at AC potential respectively specified in the table 1. for 60 +10/-0 secs. (Sub-clause 4.7)
Temperature coefficient	Resis.Range	T.C.R. (PPM/°C)	Natural resistance change per temp. degree centigrade. $\frac{R_2 - R_1}{R_1(t_2 - t_1)} \times 10^6 \quad (\text{PPM/}^\circ\text{C})$ R1: Resistance value at room temperature (t1) R2: Resistance value at room temp.plus 100°C (t2) (Sub-clause 4.8)
	≤10Ω 11Ω 99K 100K 1.1M 10M	0 ±350 0 -450 0 -700 0 -1,500	
	1M		
Short time overload	Resistance change rate is ± (1% + 0.05Ω) Max. with no evidence of mechanical damage		Permanent resistance change after the application of a potential of 2.5 times RCWV for 5 seconds. (Sub-clause 4.13)
Terminal strength	No evidence of mechanical damage.		Direct load : Resistance to a 2.5 kgs direct load for 10 secs. in the direction of the longitudinal axis of the terminal leads. Twist test : Terminal leads shall be bent through 90 ° at a point of about 6mm from the body of the resistor and shall be rotated through 360° about the original axis of the bent terminal in alternating direction for a total of 3 rotations. (Sub-clause 4.16)

Resistor Kit

CFR 1/4 W 5% (2.5 x 6.8)



Coated Type Kit Resistors (CFR)

Characteristics:

Characteristics	Limits	Test Methods (JIS C 5201-1)															
Solderability	95 % coverage Min.	The area covered with a new , smooth clean , shiny and continuous surface free from concentrated pinholes. Test temp. of solder : 245°C ±3°C Dwell time in solder : 2 to 3 seconds (Sub-clause 4.17)															
Soldering temp. reference	Electrical characteristics shall be satisfied. Without distinct deformation in appearance. (95 % coverage Min.)	The leads immersed into solder bath to 3.2mm to 4.8mm from the body. Permanent resistance change shall be checked. Wave soldering condition: (2 cycles Max.) Pre-heat: 100°C to 120°C, 30 ±5 sec. Suggestion solder temp.: 235°C to 255°C, 10 sec. (Max.) Peak temp.: 260°C Hand soldering condition: Hand Soldering bit temp. : 380 ±10°C Dwell time in solder : 3 +1/-0 sec.															
Resistance to soldering heat	Resistance change rate is ± (1% + 0.05Ω) Max. with no evidence of mechanical damage.	Permanent resistance change when leads immersed to 3.2mm to 4.8mm from the body in 350°C ±10°C solder for 3 ±0.5 seconds (Sub-clause 4.18)															
Temperature cycling	Resistance change rate is ± (1% + 0.05Ω) Max. with no evidence of mechanical damage.	Resistance change after continuous 5 cycles for duty shown below: <table border="1"> <thead> <tr> <th>Step</th><th>Temperature</th><th>Time</th></tr> </thead> <tbody> <tr> <td>1</td><td>-55°C ±3°C</td><td>30 mins</td></tr> <tr> <td>2</td><td>Room temp.</td><td>10 to15 mins</td></tr> <tr> <td>3</td><td>+155°C ±2°C</td><td>30 mins</td></tr> <tr> <td>4</td><td>Room temp.</td><td>10 to 15 mins</td></tr> </tbody> </table> (Sub-clause 4.19)	Step	Temperature	Time	1	-55°C ±3°C	30 mins	2	Room temp.	10 to15 mins	3	+155°C ±2°C	30 mins	4	Room temp.	10 to 15 mins
Step	Temperature	Time															
1	-55°C ±3°C	30 mins															
2	Room temp.	10 to15 mins															
3	+155°C ±2°C	30 mins															
4	Room temp.	10 to 15 mins															
Vibration	Resistance change rate is ± (1% + 0.05Ω) Max.	55Hz, 3 planes 2hrs each Total amplitude = 1.5mm (Sub-clause 4.22)															
in humidity	<table border="1"> <thead> <tr> <th></th><th>Resistance value</th><th>ΔR/R</th></tr> </thead> <tbody> <tr> <td rowspan="2">Normal Type</td><td><100kΩ</td><td>±3%</td></tr> <tr> <td>≧100kΩ</td><td>±5%</td></tr> </tbody> </table>		Resistance value	ΔR/R	Normal Type	<100kΩ	±3%	≧100kΩ	±5%	Resistance change after 1,000 hours Load life operating at RCWV with duty cycle of (1.5 hours "on", 0.5 hour "off") in a humidity test chamber controlled at 40°C ±2°C and 90 to 95 % relative humidity (Sub-clause 4.24.2.1)							
	Resistance value	ΔR/R															
Normal Type	<100kΩ	±3%															
	≧100kΩ	±5%															

Resistor Kit

CFR 1/4 W 5% (2.5 x 6.8)

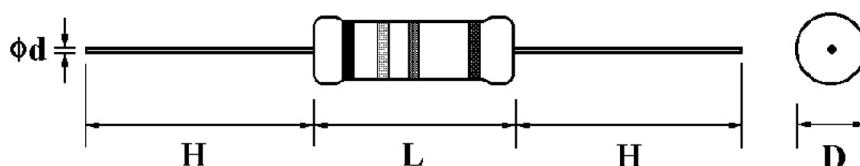


Coated Type Kit Resistors (CFR)

Characteristics:

Characteristics	Limits	Test Methods (JIS C 5201-1)
Load life	Resistance value	Permanent resistance change after 1,000 hours operating at RCWV with duty cycle of (1.5 hours "on", 0.5 hour "off") at 70°C ±2°C ambient (Sub-clause 4.25.1)
	Normal	
	Type	
	<56kΩ	±2%
	≥56kΩ	±3%
Resistance to solvent	No deterioration of protective coatings and markings	Specimens shall be immersed in a bath of richroethane completely for 3 minutes with ultrasonic

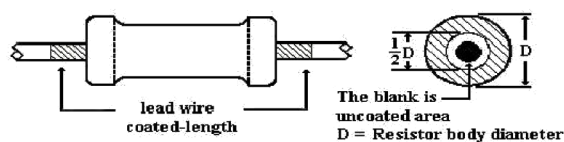
Dimension:



Type	Power Rating	D (Max.)	L (Max.)	d ±0.05	H ±3
CR	1/4W	2.5mm	6.8mm	0.54mm	28mm

Painting method:

Welding point, terminal and lead wire, is permissible to be exposed without the outer coated cover. The extent should be within 1/2 of the are angle.



Resistor Kit

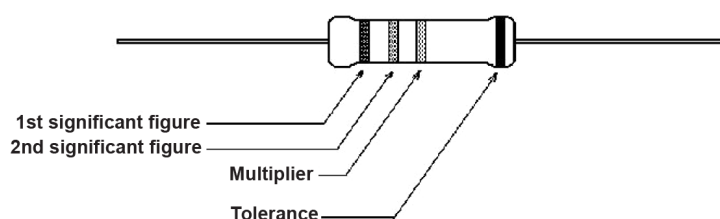
CFR 1/4 W 5% (2.5 x 6.8)



Marking:

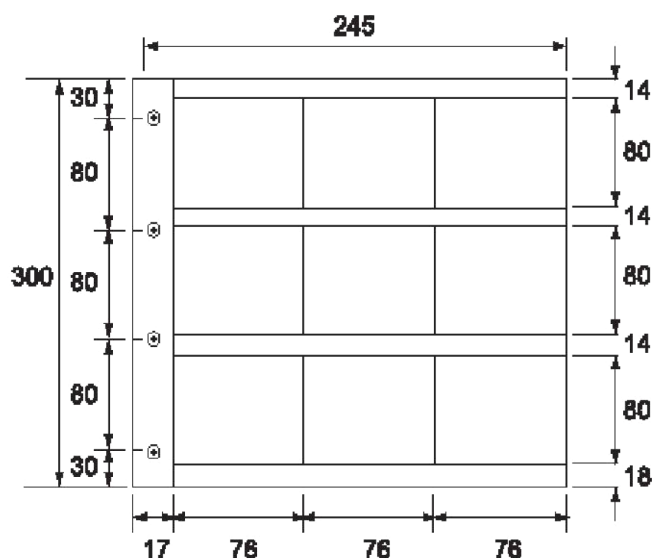
Resistor:

Resistors shall be marked with color coding
colors shall be in accordance with JIS C 0802



Kit Resistors:

Insert for Coated Kit



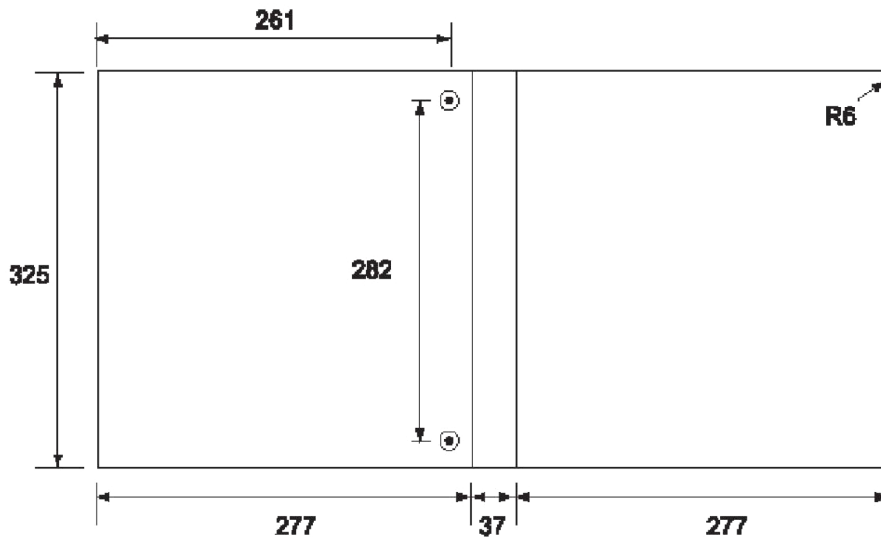
Dimensions : Millimetres

Resistor Kit

CFR 1/4 W 5% (2.5 x 6.8)



Album for Coated Kit:



Dimensions : Millimetres

Environment Related Substance:

This product complies to EU RoHS directive, EU PAHs directive, EU PFOS directive and Halogen free.

Ozone layer depleting substances.

Ozone depleting substances are not used in our manufacturing process of this product.

This product is not manufactured using Chloro fluorocarbons (CFCs), Hydrochlorofluorocarbons (HCFCs), Hydrobromofluorocarbons (HBFCs) or other ozone depleting substances in any phase of the manufacturing process.

Storage Condition:

The performance of these products, including the solderability, is guaranteed for a year from the date of arrival at your company, provided that they remain packed as they were when delivered and stored at a temperature of $25^{\circ}\text{C} \pm 5^{\circ}\text{C}$ and a relative humidity of $60\%\text{RH} \pm 10\%\text{RH}$

Even within the above guarantee periods, do not store these products in the following conditions.

Otherwise, their electrical performance and/or solderability may be deteriorated, and the packaging materials (e.g. taping materials) may be deformed or deteriorated, resulting in mounting failures.

1. In salty air or in air with a high concentration of corrosive gas, such as Cl_2 , H_2S , NH_3 , SO_2 , or NO_2
2. In direct sunlight

Resistor Kit

CFR 1/4 W 5% (2.5 x 6.8)



Farnell in One Resistor Kit:

Item	O / C	Value	Part Number	Item	O / C	Value	Part Number
1	9339094	1R	MCF 0.25W 1R	36	9339710	820R	MCF 0.25W 820R
2	9339159	1R2	MCF 0.25W 1R2	37	9339051	1K	MCF 0.25W 1K
3	9339213	1R5	MCF 0.25W 1R5	38	9339124	1K2	MCF 0.25W 1K2
4	9339272	1R8	MCF 0.25W 1R8	39	9339183	1K5	MCF 0.25W 1K5
5	9339337	2R2	MCF 0.25W 2R2	40	9339248	1K8	MCF 0.25W 1K8
6	9339396	2R7	MCF 0.25W 2R7	41	9339302	2K2	MCF 0.25W 2K2
7	9339450	3R3	MCF 0.25W 3R3	42	9339361	2K7	MCF 0.25W 2K7
8	9339515	3R9	MCF 0.25W 3R9	43	9339426	3K3	MCF 0.25W 3K3
9	9339574	4R7	MCF 0.25W 4R7	44	9339485	3K9	MCF 0.25W 3K9
10	9339639	5R6	MCF 0.25W 5R6	45	9339540	4K7	MCF 0.25W 4K7
11	9339698	6R8	MCF 0.25W 6R8	46	9339604	5K6	MCF 0.25W 5K6
12	9339752	8R2	MCF 0.25W 8R2	47	9339663	6K8	MCF 0.25W 6K8
13	9339035	10R	MCF 0.25W 10R	48	9339728	8K2	MCF 0.25W 8K2
14	9339108	12R	MCF 0.25W 12R	49	9339060	10K	MCF 0.25W 10K
15	9339167	15R	MCF 0.25W 15R	50	9339132	12K	MCF 0.25W 12K
16	9339221	18R	MCF 0.25W 18R	51	9339191	15K	MCF 0.25W 15K
17	9339280	22R	MCF 0.25W 22R	52	9339256	18K	MCF 0.25W 18K
18	9339345	27R	MCF 0.25W 27R	53	9339310	22K	MCF 0.25W 22K
19	9339400	33R	MCF 0.25W 33R	54	9339370	27K	MCF 0.25W 27K
20	9339469	39R	MCF 0.25W 39R	55	9339434	33K	MCF 0.25W 33K
21	9339523	47R	MCF 0.25W 47R	56	9339493	39K	MCF 0.25W 39K
22	9339582	56R	MCF 0.25W 56R	57	9339558	47K	MCF 0.25W 47K
23	9339647	68R	MCF 0.25W 68R	58	9339612	56K	MCF 0.25W 56K
24	9339701	82R	MCF 0.25W 82R	59	9339671	68K	MCF 0.25W 68K
25	9339043	100R	MCF 0.25W 100R	60	9339736	82K	MCF 0.25W 82K
26	9339116	120R	MCF 0.25W 120R	61	9339078	100K	MCF 0.25W 100K
27	9339175	150R	MCF 0.25W 150R	62	9339140	120K	MCF 0.25W 120K
28	9339230	180R	MCF 0.25W 180R	63	9339205	150K	MCF 0.25W 150K
29	9339299	220R	MCF 0.25W 220R	64	9339264	180K	MCF 0.25W 180K
30	9339353	270R	MCF 0.25W 270R	65	9339329	220K	MCF 0.25W 220K
31	9339418	330R	MCF 0.25W 330R	66	9339388	270K	MCF 0.25W 270K
32	9339477	390R	MCF 0.25W 390R	67	9339442	330K	MCF 0.25W 330K
33	9339531	470R	MCF 0.25W 470R	68	9339507	390K	MCF 0.25W 390K
34	9339590	560R	MCF 0.25W 560R	69	9339566	470K	MCF 0.25W 470K
35	9339655	680R	MCF 0.25W 680R	70	9339620	560K	MCF 0.25W 560K

Resistor Kit

CFR 1/4 W 5% (2.5 x 6.8)



Farnell in One Resistor Kit:

Item	O / C	Value	Part Number
71	9339680	680K	MCF 0.25W 680K
72	9339744	820K	MCF 0.25W 820K
73	9339086	1M	MCF 0.25W 1M
74	1186236	1M2	MCF 0.25W 1M2
75	1186237	1M5	MCF 0.25W 1M5
76	1186238	1M8	MCF 0.25W 1M8
77	1186239	2M2	MCF 0.25W 2M2
78	1186240	2M7	MCF 0.25W 2M7
79	1186241	3M3	MCF 0.25W 3M3
80	1186242	3M9	MCF 0.25W 3M9
81	1186244	4M7	MCF 0.25W 4M7
82	1186245	5M6	MCF 0.25W 5M6
83	1186246	6M8	MCF 0.25W 6M8
84	1186247	8M2	MCF 0.25W 8M2
85	1186248	10M	MCF 0.25W 10M

Part Number Table

Description	Part Number
Resistor Kit, 0.25W, 5%, E12	CFR0W4JE012KIL

Important Notice : This data sheet and its contents (the "Information") belong to the members of the Premier Farnell group of companies (the "Group") or are licensed to it. No licence is granted for the use of it other than for information purposes in connection with the products to which it relates. No licence of any intellectual property rights is granted. The Information is subject to change without notice and replaces all data sheets previously supplied. The Information supplied is believed to be accurate but the Group assumes no responsibility for its accuracy or completeness, any error in or omission from it or for any use made of it. Users of this data sheet should check for themselves the Information and the suitability of the products for their purpose and not make any assumptions based on information included or omitted. Liability for loss or damage resulting from any reliance on the Information or use of it (including liability resulting from negligence or where the Group was aware of the possibility of such loss or damage arising) is excluded. This will not operate to limit or restrict the Group's liability for death or personal injury resulting from its negligence. Multicomp is the registered trademark of the Group. © Premier Farnell plc 2012.